A REVIEW OF THE ACCURACY OF TREASURY REVENUE FORECASTS, 1963-1978

Staff Working Paper

February 1981

CONGRESSIONAL BUDGET OFFICE
U.S. CONGRESS
WASHINGTON, D.C.

A REVIEW OF THE ACCURACY OF TREASURY REVENUE FORECASTS, 1963 - 1978

The Congress of the United States
Congressional Budget Office

PREFACE

In the preparation of the Administration's budget each year, the Treasury Department forecasts federal receipts in the coming fiscal year. This report, prepared at the request of the Joint Economic Committee of the Congress, reviews the accuracy of the Treasury's estimates of aggregate receipts and of its estimates of the effect of significant changes in the tax law over the period 1964 to 1978. As an initial step in an ongoing effort by CBO to analyze the revenue feedback resulting from various tax changes, this study also examines the ability of econometric models to estimate retrospectively the sizes of feedback from enacted legislation. The major part of the work with the econometric models was done in mid-1979 and therefore reflects the models as they existed at that time. In accordance with CBO's mandate to provide objective and nonpartisan analysis, this study contains no recommendations.

Hyman Sanders of the Tax Analysis Division prepared the report under the direction of James M. Verdier with the assistance of Donna G. Richard, Huda Fadel, and John Morrill. The author wishes to acknowledge important contributions made by Joshua Greene, Peter Karpoff, and Fred Ribe of the Tax Analysis Division, and helpful suggestions of the CBO internal reviewers, Nariman Behravesh and James R. Capra. Many persons outside of CBO also provided valuable assistance, including John G. Wilkins, Thomas E. Vasquez, and Howard W. Nester of the Treasury Department; Michael House and David T. Dobbs of the Commerce Department; Kenneth G. Sander of the Social Security Administration; Patricia Riggle of the General Accounting Office; Leonard J. Santow of J. Henry Schroder Bank and Trust Company; Louis A. Talley of the Congressional Research Service; James Fralick of the Federal Reserve Board, and Donald W. Kiefer of the Congressional Research Service who commented on an earlier draft. Francis Pierce edited the manuscript, and Linda Brockman and Shirley Hornbuckle typed it for publication.

Alice M. Rivlin
Director

February 1981

CONTENTS

TABLES

SUMMARY

Each year, in the President's Budget, the Treasury Department provides an estimate of the federal government's receipts for the coming fiscal year. It does this by estimating tax collections under the existing tax structure and adjusting them for changes in the tax laws recommended in the budget. The accuracy of these estimates has become of greater concern in recent years, particularly since the advent of the Congressional budget process in 1974. There has also been some concern in recent years that Treasury estimates of the gain or loss in revenue from specific tax law changes may not adequately take into account "feedback" or "supply-side" responses brought about by those changes. This paper reviews the accuracy of Treasury estimates using a retrospective comparison of Treasury estimates and actual collections for the period from 1963 to 1978.

Treasury Estimates of Receipts

During the years 1963-1978, the Treasury forecasted aggregate receipts between six and nine months before the start of the fiscal year. Over this 16-year period, these estimates deviated from total collections by an average of about 4 percent. Private forecasts, by comparison, have erred in recent years by about 3 percent.

A forecast of aggregate receipts, however, may be less inaccurate than the forecasts of components of the total. In a particular year, some of the components may be overestimated and others underestimated; their offsetting differences may reduce the average deviations between the estimated and the actual aggregates. Indeed, a separate analysis of the three most important components of aggregate collections--the individual income tax, the corporation income tax, and social insurance taxes--reveals that over the period 1963-1978 their estimated amounts differed from actual collections by 6 percent, 11 percent, and 3 percent, respectively.

Estimates for each revenue source assume a particular set of economic conditions. They also assume that recommended changes in

74-013 O - 81 - 2

the tax law will be enacted by the Congress. When the foregoing estimates were adjusted for unanticipated economic events and for enacted, rather than recommended, legislation, the average difference between estimated and actual revenues for the three components mentioned dropped to 1 percent each for personal tax collections and corporation tax receipts and became insignificant for social insurance contributions over the 16-year period.

Treasury Estimates of Specific Tax Law Changes

Ideally, the Treasury's estimates of the effect of specific tax law changes on revenues could be evaluated by comparing them to the differences in revenues with and without the tax legislation. The revenue impact resulting from a tax law change cannot be directly measured, however, because the Treasury does not record the revenues that would have been received in the absence of a change. Such an estimate might be obtained with the use of an econometric model. Unfortunately, the employment of three separate models--those of Data Resources, Inc., Wharton Econometric Forecasting Associates, and the Bureau of Economic Analysis of the Department of Commerce--to estimate the revenue effects of each significant tax law change between 1964 and 1976 produced figures that differed widely without any particular pattern. These results suggest that the models must be viewed very cautiously when used for this purpose.

The Exclusion of Feedback from Treasury Estimates

Treasury estimates for proposed changes in the tax law have been criticized because they do not include "feedback"--the effect on federal revenue produced by the changes in economic activity and incomes brought about by a change in the tax law. The Treasury has argued that because aggregate revenue estimates include feedback, its further inclusion in estimates for particular proposals would result in double counting. In addition, the amount of feedback associated with particular proposals cannot be readily computed. Because of these difficulties, the Treasury has held that direct revenue estimates without allowance for feedback provide the most appropriate basis for evaluating competing tax proposals.

To test this belief, the same three econometric models were used to estimate the feedback effect for each significant tax law change in the 1964-1976 period. The models produced estimates

even more inconsistent than those of direct revenue impacts. In some cases, contrary to what one would expect, the indicated direction of the feedback was the same as that for the direct revenue impact of the tax law change. These differing and at times inconsistent results do not yield a standard by which the accuracy of the Treasury's estimates can be tested. They also suggest that the feedback effect of any specific tax law change, particularly a change in corporate tax liabilities, is still uncertain and that better methods of estimating such effects must be developed.

CHAPTER I. INTRODUCTION

Since the enactment of the Congressional Budget Act in 1974, the Congress has become increasingly concerned with the accuracy of federal outlay and revenue forecasts. The second budget resolution each year specifies a ceiling above which projected federal spending may not climb and a floor below which expected revenues may not be reduced. Because forecasts of expenditures and receipts weigh heavily in the establishment of these legislated limits, their accuracy is essential to the effectiveness of the budget process. Miscalculations can cause difficulties, since many federal programs and the tax liabilities of many taxpayers may be dependent on the availability of federal funds. Imprecise estimates may have still other repercussions: Budget projections that underestimate the size of the federal deficit may cause the Congress to stimulate the economy unintentionally, and overestimates may inadvertently result in decisions that tend to contract the economy. Recurring forecasting errors may, for these reasons, lead policymakers to give less weight to budget resolution guidelines than they do at present.

This report examines Treasury Department forecasts of aggregate tax collections and of revenue changes caused by specific tax law changes. Although Treasury revenue projections are crucial to the development of budgetary and fiscal strategies, little is known about how they are produced. A full description of the Treasury's estimating methodology is not available, and for this reason the report attempts only to evaluate the accuracy of the forecasts rather than to appraise the methodology underlying them.

Chapter II presents the aggregate revenue forecasts made in the years 1963-1978 and measures their accuracy against two standards: actual collections, and the projections of other revenue forecasters.

Treasury's critics have argued that, on the basis of certain statistical measures, Treasury's forecasts can be shown to differ considerably from actual receipts. The report discusses the adequacy of these measures and suggests alternative criteria for evaluating the Treasury's performance. It is true that comparing

Treasury estimates with actual revenues serves to highlight a number of the shortcomings of the Treasury's estimation techniques; but since the estimates of private forecasters have many of the same shortcomings, it may be more useful to measure Treasury's forecasts against the relative standard of those other forecasts.

The remainder of Chapter II is devoted to analyzing the potential sources of error in the Treasury's revenue forecasts. It focuses on two key elements--legislative and economic assumptions--and shows that they account for sizable portions of the estimation error.

Chapter III reviews the accuracy of Treasury estimates of revenue changes induced by specific changes in the tax law. Unlike the aggregate revenue data, though, Treasury estimates of the effects of legislation cannot be measured against an absolute standard since actual revenue changes resulting from tax law changes are never recorded. Therefore, the report compares Treasury estimates to other forecasters' revenue projections.

A final section of Chapter III reviews the usefulness of estimating "feedback" for specific tax law changes. Econometric models used by private forecasters produce estimates that can be broken down into a direct revenue impact and a feedback effect. The paper analyzes these estimates in detail and concludes that, given the present state of the art, provision of such estimates for corporate tax changes, in particular, can easily be misleading.

CHAPTER II. THE ACCURACY OF TREASURY ESTIMATES OF AGGREGATE COLLECTIONS

TWO MEASURES OF THE ACCURACY OF TREASURY ESTIMATES

In January of each year, the Treasury Department estimates tax receipts for the coming fiscal year.[1] Table 1 presents the annual estimates of total federal revenues between 1963 and 1978, comparing them with actual collections during this period. It shows that total revenue estimates contained in the annual budget have differed from receipts, on the average, by about 4 percent.

Critics of the Treasury's forecasting record have argued that this does not provide a stringent enough measure of Treasury's performance. The relevant measure, they say, is not how close Treasury came to predicting total revenues, but how close it came to predicting the change in revenues from one year to the next. Since revenues in recent times have rarely declined from year to year, and since the trend upward has been relatively steady, it should not be difficult, they say, to come close to predicting the annual total. The Treasury's accuracy in predicting the annual change, they argue, would be more to the point.

Table 2 shows that, when looked at in this way, the Treasury's performance is less impressive. Columns 4 and 5 show the differences between the forecasted changes and actual changes in dollar terms and in percentage terms, respectively. Between 1964 and 1978, the average percentage error--the statistic critics most frequently cite--was about 70 percent.

Although this average percentage error exceeds the mean error calculated in Table 1 by a factor of 17, both numbers, of course, are derived from the same information. Since 1963, federal revenues have ranged between $106 billion and $402 billion annually,

---

1. These figures appear in The Budget of the United States Government, published annually by the Office of Management and Budget.

TABLE 1. ESTIMATED AND ACTUAL BUDGET RECEIPTS, 1963-1978: IN BILLIONS OF DOLLARS

Fiscal Year (1)	Budget Estimate a/ (2)	Actual (3)	Difference (in dollars) (4)	Difference (in percent) (5)
1963	113.5	106.6	6.9	+6
1964	109.3	112.7	- 3.4	-3
1965	115.9	116.8	- 0.9	-1
1966	119.8	130.9	-11.1	-8
1967	141.4	149.6	- 8.2	-5
1968	163.3	153.7	9.6	+6
1969	178.1	187.8	- 9.7	-5
1970	198.7	193.7	5.0	+3
1971	202.1	188.4	13.7	+7
1972	217.6	208.6	9.0	+4
1973	220.8	232.2	-11.4	-5
1974	256.0	264.9	- 8.9	-3
1975	295.0	281.0	14.0	+5
1976	297.5	300.0	- 2.5	-1
1977	351.3	357.8	- 6.5	-2
1978	393.0	402.0	- 9.0	-2
Average Absolute Difference			8.1	4

Source: Office of Management and Budget, Budget of the United States Government, various years.

a/ Until 1977, the federal fiscal year began in July, 6 months after the initial estimates were published in the Budget, and ended 18 months later. The fiscal year now runs from October 1 to September 30, thus beginning 9 months after the revenue estimates are published in the Budget.

TABLE 2. ESTIMATED AND ACTUAL CHANGES IN BUDGET RECEIPTS, 1964-1978: IN BILLIONS OF DOLLARS

Fiscal Year (1)	Estimated Change a/ (2)	Actual Change b/ (3)	Difference (in dollars) (4)	Difference (in percent) (5)
1964	2.7	6.1	-3.4	-56
1965	3.2	4.1	-0.9	-22
1966	3.0	14.1	-11.1	-79
1967	10.5	18.7	-8.2	-44
1968	13.7	4.1	+9.6	+234
1969	24.4	34.1	-9.7	-28
1970	10.9	5.9	+5.0	+85
1971	8.4	-5.3	+13.7	+258
1972	29.2	20.2	+9.0	+45
1973	12.2	23.6	-11.4	-48
1974	23.8	32.7	-8.9	-27
1975	30.1	16.1	+14.0	+87
1976	16.5	19.0	-2.5	-13
1977	51.3	57.8	-6.5	-11
1978	35.2	44.2	-9.0	-20
Average Absolute Difference			8.2	70

SOURCE: Office of Management and Budget, Budget of the United States Government, various years.

a/ The difference between the current year's estimated receipts and the previous year's actual receipts.

b/ The difference between the current year's and the previous year's actual receipts.

and have changed by an average of $20 billion each year. Treasury aggregate projections during this period have deviated from actuals by an average of $8 billion. This $8 billion figure is large compared to the $20 billion average change in receipts, but relatively small compared to total revenues.

Selecting a Criterion to Evaluate Treasury's Performance

Both measures of error accurately reflect the Treasury's forecasting record; the choice between them depends on the purpose to be served. If the purpose is simply to determine how close Treasury has come to predicting actual total revenues, the first measure should be adequate. If, however, the purpose is to show that Treasury has difficulty predicting precise year-to-year changes, the second measure is a good illustration of that.

Few legislative or budgetary decisions are likely to turn on the exact size of year-to-year increases in revenues. For most budgetary purposes the need is to determine what total revenues are likely to be, since this indicates the resources that will be available to the federal government as well as the likely impact of the federal budget on the economy. Thus, the first measure of the accuracy of Treasury revenue estimates is the more useful one for most budgetary and legislative purposes.

One difficulty with the second measure is that in some circumstances it can be overly sensitive to year-to-year fluctuations in revenues. It may show very large percentage errors, for example, when the Treasury has in fact missed the correct total by only a relatively small amount in actual dollars. To illustrate, suppose the Treasury forecasts revenues to increase by $1 billion. If actual revenues increase by $2 billion, the Treasury will be charged with a 50 percent forecasting error. If, on the other hand, actual revenues rise by a fairly small amount, $0.1 billion, the Treasury error will be recorded as 1,000 percent, while if revenues decline by $1 billion, the error will be 200

percent.[2] These percentage errors can easily be misinterpreted, especially since federal outlay projections are not generally evaluated in this manner.[3]

The first measure remains less than ideal, however. While a 4 percent estimation error represents only a small fraction of total revenues, it nevertheless translates into $16 billion. Recurring errors of this magnitude could entail considerable political and economic costs.

It would thus be useful to have other forecasts of federal receipts with which to compare the Treasury forecasts. Such forecasts are made several times during each fiscal year by financial institutions whose investment portfolios contain government securities. Relatively few of them, however, publish their forecasts. Table 3 presents figures obtained from three New York investment houses. Their estimates were all made between December and March prior to the fiscal year concerned, and did not necessarily assume either that the administration's legislative proposals would be adopted or that its economic forecast would be realized.

---

2. The following table summarizes these results.

Case	Treasury Estimate ($ billions)	Actual Change in Collections ($ billions)	Forecasting Error
A	+1.0	+2.0	50%
B	+1.0	+0.1	1,000%
C	+1.0	-1.0	200%

3. This measure's extreme sensitivity to fluctuations in revenues can be moderated by employing a three-year moving average. In place of an annual estimate of the revenue change during a particular year, one can use the average of that annual estimate and those of the two adjacent years. This provides a better indication of underlying patterns in the series of estimated and actual changes. One drawback, though, is the inability to analyze Treasury's accuracy in specific years, particularly years when collections grow rapidly, or when they remain relatively stable.

TABLE 3. PRIVATE FORECASTERS' ESTIMATES OF BUDGET RECEIPTS, 1971-1978: IN BILLIONS OF DOLLARS

Fiscal Year	Mean Estimate	Actual	Percent Differences: Private Forecasts	Percent Differences: Treasury Forecasts a/
1971	198.7	188.4	+5	+7
1972	214.5	208.6	+3	+4
1973	221.0	232.2	-5	-5
1974	257.5	264.9	-3	-3
1975	289.0	281.0	+3	+5
1976	290.2	300.0	-3	-1
1977	363.2	357.8	+2	-2
1978	394.0	402.0	-2	-2
Average Absolute Difference			3	4

SOURCES: Aubrey G. Lanston and Company, Inc., Lehman Brothers, Inc., and J. Henry Schroder Bank and Trust Company.

NOTE: For 1971-1973, figures were available only from Lanston; for 1974, from Lehman only. The 1975 figure represents the average of the Lanston and Lehman estimates. For 1976-1978, the numbers reported are the average of the Lanston and Schroder estimates.

a/ From Table 1, col. 5.

It is evident from these data that, since 1971, private forecasters have performed about as well as the Treasury. On average, their predictions of total federal revenues have erred by about 3 percent while Treasury's estimates between 1971 and 1978 have missed the mark by about 4 percent. Given the limited number of estimates in Table 3, it is not possible to say that the differences in these error rates are statistically significant. Nevertheless, the gradual accumulation of revenue forecasting expertise outside the federal sector should eventually permit the establishment of better standards by which to evaluate Treasury forecasts.

THE EFFECT OF FORECASTING ERRORS IN SPECIFIC REVENUE SOURCES ON ESTIMATES OF TOTAL REVENUE

What factors account for the 3-4 percent error rate in private and Treasury revenue forecasts? A thorough attempt to uncover these elements requires that the receipts figures presented in Tables 1 and 3 be broken down into specific revenue sources. Evaluating the projections solely on the basis of total receipts may be misleading because overestimates of collections from some revenue sources will offset underestimates from other categories. Thus the overall difference between total estimated and actual collections in a particular year may be smaller than the sum of the differences attributable to particular revenue sources. In fiscal year 1976, for example, Table 1 shows that total revenues exceeded Treasury's projection by 1 percent. Income tax collections in that year reached $131.6 billion, however, exceeding earlier forecasts by 19 percent. Offsetting this gain was a sizable 15 percent shortfall in corporation taxes.[4] While errors in the two revenue sources were greater than for the sum of all receipts categories, they offset one another so that the overall error was much smaller.

Private forecasters' past revenue estimates for particular revenue sources are generally unavailable. Treasury estimates for most sources, however, appear annually in the President's Budget. From the published data, three categories--the individual income tax, the corporation income tax, and social insurance contributions--were chosen for study because they made up about 85 percent

---

4. Corporation tax receipts were initially estimated at $47.7 billion (see Table 5, column 1) but were later reported at $41.4 billion (Table 5, column 2).

of total federal receipts between 1963 and 1978.[5] Columns 1 and 2 of Tables 4, 5, and 6 compare the Treasury's estimates for each of these revenue sources with actual collections.

POTENTIAL SOURCES OF DIFFERENCES BETWEEN ESTIMATED AND ACTUAL REVENUES

Differences between the estimates and the actuals arise primarily because Treasury projections are based on assumptions as to economic conditions in the coming fiscal year and on assumptions as to changes in the tax law--assumptions that may not be borne out by events.[6] If Treasury estimates are adjusted for the differences between these assumed conditions and those that ultimately prevailed, the remaining differences between Treasury's estimates and actual collections can serve as a more precise measure of the predictive accuracy of the Treasury's estimating techniques.

Differences Caused by Legislative Assumptions. The aggregate estimates appearing in the budget are based upon existing tax laws and the Administration's proposed changes in these laws. The ultimate tax legislation enacted by the Congress often differs substantially from the President's initial proposals. Table 4 includes a number of instances in which income tax collections were different from those estimated because Congressional action modified the legislative requests made by the Administration. For example, the President recommended income tax changes for fiscal year 1976 that would have reduced collections by over $32 billion. The enacted legislation, however, cut income taxes by only $13 billion, or $19 billion less than initially proposed.

---

5. The size of this share has varied from year to year. For a given year, this fraction can be computed by adding the historical figures for that year appearing in Tables 4, 5, and 6 and dividing the total by the overall collections figure shown in Table 1.

6. See former Secretary of the Treasury Simon's testimony in Hearings on the Second Budget Resolution, Fiscal Year 1976, House Budget Committee, September 29, 1975, especially pp. 5-9.

Column 4 in Tables 4, 5, and 6 shows adjusted revenue estimates that take into account the differences between proposed and enacted tax measures. These figures are calculated by adding to initially forecasted revenues the revenue losses (or gains) resulting from the Administration's proposed tax changes, and then subtracting the estimated revenue effects of newly enacted tax provisions.[7] When these adjustments are made, the difference between estimated and actual receipts for the individual income tax drops from 6 percent to 4 percent; the difference for corporation income taxes falls from 11 percent to 8 percent; and that for social insurance contributions declines from 3 percent to 2 percent. These changes reduce the average difference for the three revenue sources combined by about 2 percentage points.

Differences Caused by Economic Assumptions. Besides errors resulting from legislative assumptions, Treasury revenue estimates may differ from actual receipts because the Administration's forecast of future economic conditions is not realized. Since most federal revenue sources are highly sensitive to the state of the economy, this can lead to substantial differences between estimates and actuals. For example, the 1974-1975 recession, largely unanticipated in the Administration's forecast, contributed to slower growth in individual income tax receipts. Because the revenue estimation techniques used by the Treasury are not available, little is known about the sensitivity of the Treasury's revenue estimates to underlying economic conditions. Isolating the precise effects of changes in economic activity on federal revenues is thus extremely difficult.

Table 7 shows the differences (in percentage terms) between the Administration's assumptions about GNP, personal income, and

---

7. These adjustments can only approximate the legislative assumptions' true revenue impact because Congressional actions changing the Administration's proposed fiscal policy stance will have their own economic effects. These effects, though, are likely to be fairly small. Reestimating totals based on a revised economic forecast taking into consideration newly enacted legislation would provide marginally greater accuracy. Unfortunately, because of difficulties in quantifying the effects of legislative actions, the revised figures may not necessarily be better than the unadjusted totals presented in the text.

TABLE 4. ESTIMATED AND ACTUAL REVENUES FROM INDIVIDUAL INCOME TAXES, 1963-1978: IN BILLIONS OF DOLLARS

Fiscal Year	Budget Estimate a/	Actual	Percent Difference	Estimate Adjusted for Legislative Differences b/	Percent Difference Between Adjusted Estimate and Actual
1963	49.3	47.6	+4	49.6	+4
1964	45.8	48.7	-6	47.9	-2
1965	48.5	48.8	-1	47.0	-4
1966	48.2	55.4	-13	48.2	-13
1967	56.2	61.5	-9	55.8	-9
1968	73.2	68.7	+7	69.8	+2
1969	80.9	87.2	-7	82.4	-6
1970	90.4	90.4	0	90.4	0
1971	91.0	86.2	+6	91.0	+6
1972	93.7	94.7	-1	91.8	-3
1973	93.9	103.2	-9	94.8	-8
1974	111.6	119.0	-6	112.2	-6
1975	129.0	122.4	+5	121.3	-1
1976	106.3	131.6	-19	125.9	-4
1977	153.6	157.6	-3	160.5	+2
1978	171.2	181.0	-5	181.8	0
Average Absolute Difference			6		4

SOURCE: Office of Management and Budget, Budget of the United States Government, various years.

a/ Between 1963 and 1976, estimate appears in the President's budget six months prior to the start of the fiscal year. Since 1976, estimate appears 9 months before the fiscal year.

b/ Column shows what the budget estimate would have been if it had been based on the legislation actually enacted.

TABLE 5. ESTIMATED AND ACTUAL REVENUES FROM CORPORATION INCOME TAXES, 1963-1978: IN BILLIONS OF DOLLARS

Fiscal Year	Budget Estimate a/	Actual	Percent Difference	Estimate Adjusted for Legislative Differences b/	Percent Difference Between Adjusted Estimate and Actual
1963	26.6	21.6	+23	22.7	+ 5
1964	23.8	23.5	+ 1	25.0	+ 6
1965	25.8	25.5	+ 1	25.2	+ 1
1966	27.6	30.1	- 8	28.6	+ 5
1967	34.4	34.0	+ 1	34.4	+ 1
1968	33.9	28.7	+18	31.8	+11
1969	34.3	36.7	- 7	35.8	- 2
1970	37.9	32.8	+16	37.9	+16
1971	35.0	26.8	+31	35.0	+31
1972	36.7	32.2	+14	36.7	+14
1973	35.7	36.2	- 1	35.7	- 1
1974	37.0	38.6	- 4	37.0	- 4
1975	48.0	40.6	+18	44.2	+ 9
1976	47.7	41.4	+15	37.7	- 9
1977	49.5	54.9	-10	52.5	- 4
1978	58.9	60.0	- 2	62.2	+ 4
Average Absolute Difference			11		8

SOURCE: Office of Management and Budget, Budget of the United States Government, various years.

a/ Between 1963 and 1976, estimate appears in the President's budget six months prior to the start of the fiscal year. Since 1976, estimate appears 9 months before the fiscal year.

b/ Column shows what the budget estimate would have been if it had been based on the legislation actually enacted.

74-013 O - 81 - 3

TABLE 6. ESTIMATED AND ACTUAL REVENUES FROM SOCIAL INSURANCE CONTRIBUTIONS, 1963-1978: IN BILLIONS OF DOLLARS

Fiscal Year	Budget Estimate a/	Actual	Percent Difference	Estimate Adjusted for Legislative Diferences b/	Percent Difference Between Adjusted Estimate and Actual
1963	19.6	19.8	- 1	19.4	- 2
1964	21.5	22.0	- 2	21.3	- 3
1965	21.9	22.3	- 2	21.9	- 2
1966	23.9	25.6	- 7	25.8	- 1
1967	30.5	33.3	- 8	30.4	- 9
1968	35.0	34.6	+ 1	35.1	+ 1
1969	40.0	39.9	0	40.0	0
1970	45.9	45.3	+ 1	43.9	- 3
1971	49.1	48.6	+ 1	48.8	0
1972	57.6	53.9	+ 7	54.9	+ 2
1973	63.7	64.5	- 1	68.4	+ 6
1974	78.2	76.8	+ 2	78.0	+ 2
1975	85.6	86.4	- 1	85.4	- 1
1976	91.6	92.7	- 1	91.5	- 1
1977	113.1	108.7	+ 4	108.0	0
1978	126.1	123.4	+ 2	124.8	+ 1
Average Absolute Difference			3		2

SOURCE: Office of Management and Budget, Budget of the United States Government, various years.

a/ Between 1963 and 1976, estimate appears in the President's budget six months prior to the start of the fiscal year. Since 1976, estimate appears 9 months before the fiscal year.

b/ Column shows what the budget estimate would have been if it had been based on the legislation actually enacted.

TABLE 7. PERCENT DIFFERENCES BETWEEN THE ADMINISTRATION'S ECONOMIC ASSUMPTIONS AND ACTUAL ECONOMIC CONDITIONS, 1963-1978

Calendar Year	GNP a/	Personal Income a/	Pre-tax Corporate Profits a/
1963	-1	-1	+ 3
1964	-1	-1	-14
1965	-3	-3	-19
1966	-3	-3	- 5
1967	0	-1	+ 2
1968	-2	-2	- 5
1969	-1	-2	+ 5
1970	+1	0	+18
1971	+1	+1	+18
1972	-1	-2	+ 1
1973	-2	-4	-12
1974	-1	-2	- 6
1975	-1	-1	+ 1
1976	-1	0	- 1
1977	0	-1	- 1
1978	-1	-1	- 7
Average Absolute Difference:	1	2	7

NOTE: Figures appearing in the budget documents represent midpoints of intervals extending several billion dollars on each side. It is assumed, however, that the Treasury uses the published figures as a basis for its own estimates.

a/ Source: Office of Management and Budget, Budget of the United States Government, various years.

pre-tax corporate profits from 1963 to 1978 and the levels actually achieved in those years. Since the Administration's economic forecasts underly the Treasury estimates of tax collections, they would seem to be responsible for some of the observed differences between Treasury projections and historical receipts.[8] While in practice it may be difficult to measure the precise relationship, it is possible to approximate the general magnitude of the differences contributed by economic assumptions.[9] Since projections of personal income between 1963 and 1978 deviated from reported totals by an average of 2 percent, economic factors may account for 2 points of the average 3 percent difference between estimated and actual social insurance contributions, and about 3 points of the average 5 percent difference in individual income tax receipts.[10] Similarly, 8 points of the average 10 percent

---

8. Lacking access to the Treasury models, CBO has assumed that differences between receipts and estimates are proportional to the size of the differences between the economic assumptions and the economic performance. For example, if the Administration underestimates GNP, personal income, and corporate profits by 10 percent, then, in theory, estimated collections from most federal revenue sources (see footnote 10) should be about 10 percent lower than actual receipts. If estimated collections turn out to be 12 percent lower, the extra 2 percent would be attributed to imprecision in Treasury's estimation methodology.

9. It is not obvious that more sophisticated statistical techniques would yield more definitive results. Most econometric models, for example, use economic factors in predicting future tax collections that do not directly correspond to those used by the Administration. Incorporating the Administration's assumptions into these models would require numerous adjustments that would only indirectly affect the models' estimates of revenues. It is unlikely that the results of these makeshift changes would describe reliably the relationship between economic activity and tax collections.

10. For the individual income tax, there is likely to be a more than proportional response of receipts to errors in estimating personal income, since the progressivity of the tax

difference in corporation tax receipts can be related to errors in the Administration's forecasts of corporate profits.

Other Differences Between Estimated and Actual Revenues. After removing the impact on revenues of differences between proposed and enacted legislation and differences between assumed economic conditions and those achieved, the remaining differences between Treasury estimates and actual receipts are fairly small. Table 8 shows that the component of the total difference that can be labeled the methodological error amounted to about 1 percent each for personal tax collections and corporation tax revenues and was insignificant for social insurance contributions. On the average, therefore, Treasury receipts estimates after adjustments were accurate to within 1 percent of actual collections.

TABLE 8. PERCENT DIFFERENCES BETWEEN TREASURY ESTIMATES AND ACTUAL COLLECTIONS, 1963-1978--SUMMARY

Revenue Source	Total Difference	Difference Due to Legislative Assumptions	Difference Due to Economic Assumptions	Remaining Difference
Individual income tax	6	2	3	1
Corporation income tax	11	3	7	1
Social insurance contributions	3	1	2	0

structure serves to exaggerate the impact of changes in personal income. Assuming that the elasticity of receipts to changes in income is about 1.5, the average two percent error in estimating personal income will result in about a three percent difference in projected income tax liabilities.